

REMARKS

Claims 1-4, 6-9, 19, 21-27, 29, 32, 34-40, 42-46, 48-52 and 56-60 were examined. Applicant notes with appreciation that claims 19, 21-27, 29, 32, 34-40 and 42 are allowed. Claims 1-4, 6-9, 43-46, 48-52 and 56-60 are rejected. Applicant amends claims 1, 43, 46, 52 and 57, and asserts that no new matter is added herein. Amendment to claims 57 is to cure a typographical error. Furthermore, amendments to the claims 1, 43, and 46 are supported as at least at paragraph 42 and feature 370 of Figure 2 of the application. Amendment to claims 52 is supported as at least at paragraph 52 and feature 630 of Figure 5 of the application. Applicant respectfully request reconsideration of claims 1-4, 6-9, 19, 21-27, 29, 32, 34-40, 42-46, 48-52 and 56-60, as amended, in view of at least the following remarks.

I. Claim Objections

The Patent Office objects to claim 57 because “the gantry head” lacks antecedent basis. Applicant amends claim 57 to require “a gantry head.” Hence, Applicant asserts that claim 57 is proper and respectfully requests withdrawal of the objection above.

II. Claims Rejected Under 35 U.S.C. § 101

The Patent Office rejects claims 1-4, 6-9, 43-46 and 48-51 under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter. Specifically, the claims do not produce a final result which meets the standard of being concrete, tangible and useful. Applicants amend claims 1, 43 and 46 to require “at least one of saving an adjustment to the treatment plan, and executing the adjusted treatment plan.” Hence, Applicants assert that claims 1, 43, 46 and dependent claims thereof are directed to statutory subject matter. Thus, Applicants respectfully request the Patent Office withdraw the rejection above. Applicant submits that based on the foregoing, claims 1-

4, 6-9, 43-46 and 48-51 are now in condition for allowance and respectfully requests allowance of the same.

III. Claim Rejections Under 35 U.S.C §102

The Patent Office rejects claims 56 and 60 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent Application Publication No. 2003/0048868 to Bailey, et al. (Bailey). It is axiomatic that to be anticipated every limitation of a claim must disclosed in a single reference.

Applicant respectfully disagrees with the rejection above and submits that independent claim 56 is patentable over the cited references for at least the reason that Bailey does not disclose a system that comprises a simulation component "wherein said radiation source is at a fixed position relative to the gantry that simulates a distance between a patient and a treatment source in a treatment machine," as required by claim 56. As described in the present specification, at paragraphs 56 and 57, for example, prior art simulation systems required a source that could move in relation to the gantry in order to simulate the distance to a patient that could be achieved on a treatment machine.

Bailey discloses positioning patient 62 on table 60, comparing CT scanner slices of the patient with images taken during the planning stage (e.g., of an original plan), and moving the table to insure that the target region of the patient is within the region of interest (e.g., as specified by an original plan) so that it can be exposed to the radiotherapy beam 50 (see paragraphs 48-49). Bailey also discloses adjusting the size and shape of the radiotherapy beam, adjusting the table position, and adjusting the angular position of radiation source 40 (to be according to the original plan), automatically, with some or complete control by the therapist, by using a computerized system including computer 80 (see paragraphs 51-53). Moreover, Bailey discloses a suitable collimator subsystem at 46 so that the cross-sectional shape and size of the radiotherapy beam can be modified to have a shape and size as specified by an original plan (see paragraph 41). For example, Bailey does not teach or suggest a system with a simulation component wherein the radiation source is at a fixed position relative to the

gantry that simulates a distance between a patient and a treatment source in a treatment machine.

On page 5 of the current Office Action, first paragraph, the Patent Office asserts that the claim does not differentiate the claimed apparatus from the cited references because the cited references teach all of the structural limitations of the claim (see MPEP § 2114). However, this is not true. The Patent Office has not identified and Applicants are unable to find where Bailey discloses a structural limitation equal to a radiation source at a fixed position that simulates a distance between a patient and a treatment source in a treatment machine, as required by claim 56. Hence, Applicant respectfully requests that the Patent Office withdraw the rejection above.

Also, Applicant respectfully disagrees with the rejection above and submits that independent claim 60 is patentable over the cited references for at least the reason that Bailey does not disclose a distance from the radiation source to the axis of rotation is a fixed distance that simulates a treatment source to treatment system axis of rotation of linear accelerator treatment system, as required by claim 60. As described in the present specification, at paragraphs 56 and 57, for example, prior art simulation systems require a source that could be moved to change the distance between the source and the axis of rotation of the gantry, in order to allow the source to be at a distance that simulates a treatment source to treatment system axis of rotation of a linear accelerator treatment system. For example, Bailey does not teach or suggest a simulation system with a simulation component wherein the radiation source is at a fixed distance relative to the axis of rotation of the gantry that simulates a treatment source to treatment system axis of rotation of a linear accelerator treatment system.

Again, on page 5 of the current Office Action, first paragraph, the Patent Office asserts that the claim does not differentiate the claimed apparatus from the cited references because the cited references teach all of the structural limitations of the claim (see MPEP § 2114). However, Applicants disagree. The Patent Office has not identified and Applicants are unable to find where Bailey discloses a structural limitation equal to a distance from the radiation source to the axis of rotation is a fixed distance that simulates a treatment source to treatment system axis of rotation of linear accelerator

treatment system, as required by claim 60. Hence, Applicant respectfully requests the Patent Office withdraw the rejection above.

The Patent Office rejects claim 57 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,301,325 to Besson et al. (Besson).

Applicant respectfully disagrees with the rejection above and submits that independent claim 57 is patentable over the cited references for at least the reason that Besson does not disclose means to move the patient support closer to and/or further from the gantry head as the gantry rotates to maintain a constant distance between the radiation source and a point defined in relation to the patient support, as required by amended claim 57. As described in the present specification, at paragraphs 56 and 57, software may automatically move the treatment couch closer to the gantry head and, as the gantry head is rotated around the patient, the couch may be and automatically repositioned closer to and/or further from the gantry head to maintain this treatment distance. For example at paragraph 57, the present invention allows for maintaining a constant distance between the source, and e.g. a target, during rotation, with the capability to provide treatment simulation for machines having different source to isocenter distances.

On the other hand, Besson teaches that table 46 is moved along a translation axis 48 aligned with the Z-axis of the Cartesian Coordinate System (see column 5 lines 14-16), but does not teach moving the table closer to and/or further from the gantry head as the gantry rotates to maintain a constant distance between the radiation source and a point defined in relation to the patient support. Specifically, as shown in Figure 2 of Besson, the Z-axis extends in a direction between the patient's head and foot, but does not disclose moving the table closer to and/or further from the gantry head, as required by claim 57.

Hence, for at least this reason, Applicant respectfully requests that the Patent Office withdraw the rejection above of claim 57.

Any dependent claims not mentioned above are submitted as not being anticipated or obvious, for at least the same reasons given above in support of their base claims in addition to further non-obvious limitations added by each dependent claim.

IV. Claim Rejections Under 35 U.S.C §103

The Patent Office rejects claim 52 under 35 U.S.C. §103(a) as being unpatentable over Bailey in view of U.S. Patent Application Publication 2003/0007601 to Jaffray, et al. (Jaffray) and U.S. Patent No. 6,400,796 to Munro, III et al. (Munro). To render a claim obvious, all limitations of that claim must be taught or suggested by at least one properly combined reference.

Applicant respectfully disagrees with the rejection above and submits that independent claim 52, as amended, is patentable over the cited references because the references do not teach or suggest performing brachytherapy comprising producing a treatment plan for placement of a radiation source in the patient based on the image while the patient is on the patient support; and treating the patient according to the treatment plan on the patient support, as required by amended claim 52.

The claim must be considered as a whole.

As noted above, with respect to claim 1, Bailey teaches adjusting a position of a patient and/or a radiotherapy beam to appropriate positions according to a treatment plan. Specifically, Bailey teaches that sliced images are obtained to produce a plan, the images are then used to plan treatment, and “when treatment is to be provided the patient 62 is provided on table 60...” (see paragraphs 47 and 48). However, Bailey does not teach placement of a radiation source in the patient.

Jaffray teaches implanting radio-opaque markers on a lesion (see paragraph 11). As known in the industry, brachytherapy includes a temporary radiation implant, or a permanent implant of a radioactive source, such as a seed. On the other hand, Jaffray describes radio-opaque markers, but not implanted radiation sources in the patient.

Next, the Patent Office cites Munro for showing “that external and internal radiation sources are recognized equivalents known in the art (col. 2, lines 10-35),” and

concludes that, thus, "one of ordinary skill in the art would have found it obvious to substitute one type of radiation source for another."

First, Applicant disagrees because Munro does not show that external and internal radiation sources are recognized equivalents. Specifically, at Col. 2 lines 10-28, Munro teaches: (1) that various therapeutic techniques have also been developed for treatment of tumorous, pre-cancerous, or other diseased tissue; (2) that brachytherapy may potentially reduce undesirable side effects associated with teletherapy, such as irradiation of healthy tissue; (3) that a common brachytherapy technique using numerous catheters may be simultaneously inserted into the treatment site is cumbersome, time-intensive, presents an increased risk of infection to the patient, and can result in significant discomfort for the patient during treatment. It can hardly be said that pointing out that various techniques have been developed for treatment of something, or that reciting problems associated with such techniques teaches that two of the techniques are "equivalent". Instead, describing the different problems associated with the two techniques teaches that they are different.

Second, Applicant disagrees because the cited motive "to substitute one type of radiation source for another" does not read on the claim. The claim requires producing an image of a patient on a patient support; producing a treatment plan for placement of a radiation source in the patient based on the image while the patient is on the patient support; and treating the patient according to the treatment plan on the patient support. Thus, the cited motive of using one type of source, or another does not teach using both as required by the claim.

Consequently, since neither Bailey, Jaffray, Munro, nor the combination, teaches or suggests the above noted limitations of claim 52, Applicant respectfully requests that the Patent Office withdraw the rejection above.

The Patent Office rejects claims 58 and 59 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,535,574 to Collins et al. (Collins), in view of Toshiba "Clinical Performance: Delivering upon the Promise of Multi-slice CT through Proven Performance".

Applicant disagrees with the rejection above and submits that independent claim 58, is patentable over the cited references because the cited references do not teach or suggest a gantry that “comprises a single cast frame, wherein the frame comprises a first elongated portion and a second elongated portion disposed at an angle to one another,” as required by claim 58.

Collins describes a patient positioning system employing surface photogrammetry and portal imaging (see Title) including gantry 210 (see Fig. 1, column 3 lines 41-56). However, the Patent Office has not identified and Applicant is unable to find any teaching or suggestion in Collins that gantry 210 is a single cast frame gantry having two portions at an angle, as required by claim 58.

The Patent Office relies upon Toshiba to teach casting (page 3, col. 1, lines 28-31) and cites “to reduce vibrations (page 3, col. 1) as implied from Toshiba” as a motive to combine Collins with Toshiba. However, this motive is improper for two reasons.

First, the motivation is improper because Toshiba teaches overcoming vibration with a proprietary design that “uses supports at both ends of the tube housing to stabilize the anode” (see page 3, col. 1, lines 31-34). For instance, the gantry of Toshiba has a “unique tube design” (see page 3 column 1, lines 30-31) and triangular wedge shaped supports (see the picture on page 7 of the donut shaped gantry supported by wedges). Thus, a practitioner would not be motivated to use the Toshiba design to reduce vibrations in Collins because the principle of operation of the Toshiba vibration reduction design requires using supports and a tube housing which can not be properly combined with gantry 210 of Collins.

Second, Applicant asserts that the motivation of combining Collins with Toshiba to “reduce vibrations (page 3, col. 1) as implied from Toshiba,” is improper because the gantry of Collins does not experience the vibrations of concern in Toshiba since the gantry of Collins is not a ring or donut gantry, like the gantry of Toshiba. For example, for Toshiba, vibration may be an issue because ring or donut type gantries rotate much faster than the “L” type gantry of Collins. For instance, as known in the art, a ring or donut type gantry may rotate on the order of one to three times per second, while the “L” typed gantry in Collins may rotate at about one RPM (e.g., approximately 60-180

times slower than the gantry in Toshiba). Thus, a practitioner would not be motivated to look at or follow the teachings of Toshiba in order to reduce excessive vibration in the gantry of Collins, because as known in the art, they have different vibrational/resonance characteristics and such excessive vibration is not an issue for Collins.

Hence, for at least these two reasons, Applicant respectfully requests the Patent Office withdraw the rejection above of claim 58.

Any dependent claims not mentioned above are submitted as not being anticipated or obvious, for at least the same reasons given above in support of their base claims in addition to further non-obvious limitations added by each dependent claim.

V. Allowable Subject Matter

Applicant notes with appreciation that claims 19, 21-27, 29, 32, 34-40 and 42 are allowed and the Reasons for Allowance therefore.

CONCLUSION

In view of the foregoing, it is believed that all claims now pending patentably define the subject invention over the prior art of record and are in condition for allowance, and such action is earnestly solicited at the earliest possible date.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2666 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17.

If a telephone interview would expedite the prosecution of this Application, the Examiner is invited to contact the undersigned at (310) 207-3800.

Respectfully submitted,

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 3/20/07

Amber D. Saunders Date